Spring 2020

The Social and Economic Inequalities of the Continuing HIV Epidemic: Challenges to the NYC DOHMH "End the Epidemic" Program

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Thesis submitted to Levy Economics Institute of Bard College

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Acknowledgements:

Thanks to the Levy Institute, to all the professors and faculty, for providing me with the means to educate myself and develop my thoughts.

Thanks to Martha Tepepa, not only for helping me secure what was necessary to develop my capabilities as a human being (and academic) but also for teaching me the importance of listening to the voices of others who have historically been underrepresented in institutions of higher education.

Thanks to the Levy Institute for its support of PLWHA and LGBTQIA+ pursuing higher education.

Thank you to my classmates for allowing an open and safe space to pursue an education.

For Phillip Turlan. For Nyjere. For all PLWHA. For their loved ones. For their families. For their futures. For the young gay men '...who may be in the middle of casting off internalized homophobia' and who 'must feel able to say no to partners who put them at risk' and who 'must realize their vulnerability to infection despite their youth.' For the women who suffer silently. For the young gay black men. For the more than 700 PLWHA living day to day on the streets and sleeping night by night in NYC shelters.

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Thinking about illness!-To calm the imagination of the invalid, so that at least he should not, as hitherto, have to suffer more from thinking about his illness than from the illness itself-that, I think, would be something!- Freidrich Nietzsche, 'Daybreak'

Abstract

Historical data from the New York City Department of Health and Mental Hygiene's (NYC DOHMH) Community Health Survey provides a comparison of multidimensional health disparities for HIV and AIDS healthcare across social and economic groups in New York City. The data cover the period from 2012-2018, the period of PrEP's implementation in NYC's 'End the Epidemic 'program.' During the period, persistent health disparities increased for men who have sex with men (MSM), racial minorities, and persons living below the NYC poverty line. The paper focuses on the challenges presented by the political economy of access to preventative treatment for HIV therapy for persons at risk for an HIV infection, as uptake of PrEP by persons at high risk for an HIV infection is the mechanism by which the new rate of HIV infection is expected to decrease. The paper concludes with public policy suggestions for the NYC DOHMH, namely a suggestion of targeted, proportional responses in neighborhoods with a high rate of new HIV infection, community viral load, or HIV and AIDS prevalence.

Keywords: Public Health; HIV/AIDS; Health Disparities; Health Economics

JEL Classifications: I14. I18, H75,

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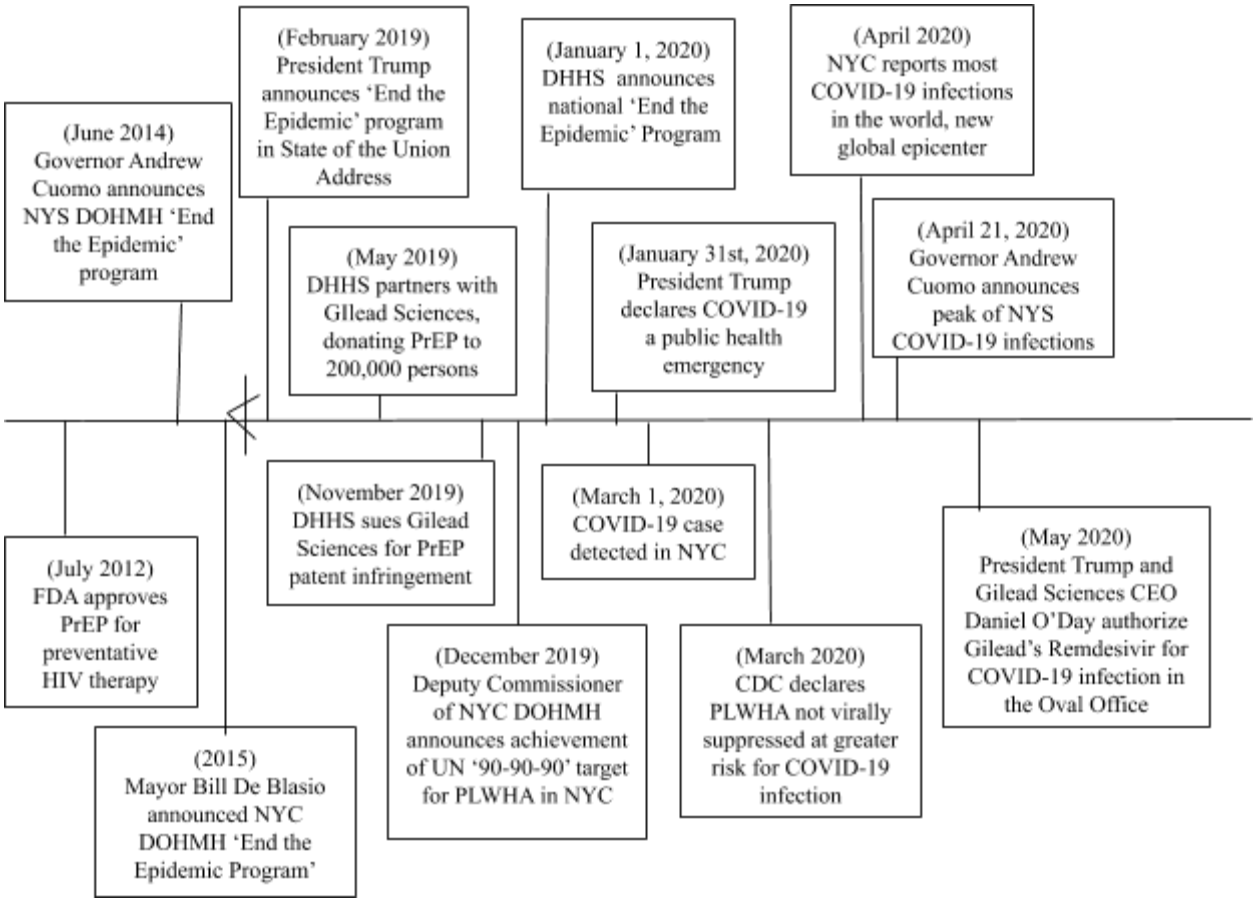
Timeline of Public Policy



Political Economy Issues in the Ongoing HIV Epidemic of New York City

In the United States, more than 1,200,000 people live with an HIV or AIDS diagnosis (CDC 1). In New York City, there are over 125,000 PLWHA (NYC DOHMH 1). To date, over 100,000 New Yorkers have died from AIDS-related illnesses (GMHC 1). In the United States, New York City is the historical epicenter of the HIV epidemic. The paper argues that the New

York City Department of Health and Mental Hygiene NYC DOHMH should design public policy for HIV and AIDS healthcare with regard for the history of social, political, and economic inequalities faced by PLWHA living in New York City.

From the beginning of the HIV and AIDS epidemic, men who have sex with men (MSM), particularly MSM who identify as gay,[1] were subject to the outright prejudice of many politicians at the local, state, and federal[2] level in their attempt to secure healthcare resources from all levels of the United States government to deal with a novel viral pandemic. Despite the initial government inaction on behalf of the Reagan Administration in response to the public health crisis, Congressional leaders in the late 1980s could not ignore the increasing rate of infection and its consequences for the public health of the United States. By 1988, the United States (and many countries in Western Europe) were faced with a novel virus without any known effective treatment prospect provided until 1996. Thus in 1988, in a bi-partisan effort, with a wide majority in the Senate and the House, and with *only* three nongermane amendments, the United States Congress wrote into law the AIDS Federal Policy Act (Bill S.1220), colloquially the 'HOPE' Act, thereby appropriating '...US $700 million in research and education funds to be channeled through the Centers for Disease Control and the National Institutes of Health to a mix of national and international organizations, state and local governments, and community-based groups," (Guttamacher 1). Though bi-partisan in its effort to protect public health, the AIDS Federal Policy Act of 1988 was scrutinized by many politicians at all levels of government for its partisan, conservative implementation of the resources allotted by Congress to local health departments and federal public health research institutions. Most pressingly, the discrimination

[1] Explain the difference
[2]

inherent to the implementation of federal expenditures on HIV and AIDS healthcare was the result of an amendment (S.Amdt.1992) introduced by the Republican Senator Jesse Helms of North Carolina, which "[Prohibited] funds from being used to provide counseling that promotes or encourages, directly, homosexual or unsafe heterosexual sexual activity or intravenous substance abuse" (AIDS Federal Policy Act of 1988). In a bi-partisan vote, the House voted 78-18 in favor of S.Amdt.1992, reaffirming the *openly* homophobic and *implicitly* racist values of Senator Helms.

In response to Senator Helms in the same year, Mayor of New York City Edward Koch, facing governance at the epicenter of the epidemic, wrote an opinion article in the New York Times entitled, 'Senator Helms Callousness Towards AIDS Victims,' where he claimed "Mr. Helms introduced [S.Amdt.1992] because he's upset with New York's Gay Men's Health Crisis. The organization has established a brilliant reputation in caring for and counseling those with AIDS and in educating others on how to prevent the spread of AIDS" (Koch 2). The political dialogue of Helms and Koch evidences not only what will later be referred to as a 'highly centralized resource creation' for HIV healthcare, with conflict between federal and local health politics, but also the historical socio-economic marginalization of the LGBTQIA+ PLWHA population in NYC's continuing HIV epidemic. MSM have always represented the majority of new HIV infections in NYC and the United States. Despite representing an estimated 5.1% of the NYC metropolitan male population (Grey 2019, "estimating..') MSM represented over 60% of all new HIV infections in NYC in 2018 (Nyc hiv surveillance report 2019). HIV as a public health issue in NYC is thus primarily an issue of LGBTQIA+ public health.

In an effort to organize the public health interests of the gay men, activist Larry Kramer, in 1982, founded the New York Gay Men's Health Crisis, the organization Mayor Edward Koch of New York City identified as the target of Senator Helms' amendment to the 1988 AIDS Federal Policy Act. The amendment exemplifies the reaction of many conservative politicians, where *public policy for HIV in the United States acted against widespread medical evidence of heterosexual HIV transmission and on the presumption that HIV was a product of the gay community rather than a public health crisis which disproportionately affected the MSM community,* a sexual health minority with then already unequal access to the political and economic resources.[3] Public health officials not only reinforced deeply-rooted stereotypes directed at the gay community in the New York City, but the conflation of HIV with the MSM community prevented PLWHA who did not identify as 'gay' from seeking the already limited social, political and economic resources to address their own diagnosis in fear of being identified as part of the gay community. Larry Kramer published an article entitled, '1,121 and Counting,' a text widely circulated in LGBTQ and MSM socio-centric information networks (the article was originally printed in a gay magazine, the *New York Native*), where he criticized the NYC DOHMH (and Mayor Ed Koch) for disregarding the health crisis in the gay community:

> I believe it falls to this city's Department of Health, under Commissioner David Sencer, and the Health and Hospitals Corporation, under Commissioner Stanley Brezenoff, to educate this city, its citizens, and its hospital workers about all areas of a public health emergency... Almost everything this city knows about AIDS has come to it, in one way or another, through Gay Men's Health Crisis. And that includes television programs, magazine articles, radio commercials, newsletters, health-recommendation brochures,

[3] On July 3, 1981, the New York Times reported on a 'rare gay cancer seen in 41 homosexuals.' The conflation of HIV with the gay community, often referring to new cases as 'GRID,' or 'gay related immune deficiency,' was for a short time commonplace.

> open forums, and sending speakers everywhere, including - when asked - into hospitals. If three out of four AIDS cases were occurring in straights instead of in gay men, you can bet all hospitals and their staffs would know what was happening. And it would be this city's Health Department and Health and Hospitals Corporation that would be telling them (Kramer).

Kramer's argument also focused on the limited economic and financial resources for HIV and AIDS treatment and research for PLWHA in NYC:

> Every hospital in New York that's involved in AIDS research has used up every bit of the money it could find for researching AIDS while waiting for NIH grants to come through. These hospitals have been working on AIDS for up to two years and are now desperate for replenishing funds. Important studies that began last year, such as Dr. Michael Lange's at St. Luke's-Roosevelt, are now going under for lack of money. Important leads that were and are developing cannot be pursued. (For instance, few hospitals can afford plasmapheresis machines, and few patients can afford this experimental treatment either, since few insurance policies will cover the $16,600 bill.) New York University Hospital, the largest treatment center for AIDS patients in the world, has had its grant application pending at NIH for a year and a half (Ibid).

The text provides an important view of the political economy of HIV and AIDS in NYC in the early period of the crisis, where the lack of active public policy and denial of minority sexual health rights led to an accelerating rate of new HIV infection amongst MSM in NYC and minority gorups. The psycho-social, socio-centric, and economic trauma experienced by the MSM and gay community in NYC resulted not only from an accelerating rate of new HIV infection (and deaths from AIDS-related illnesses) but also a lack of proactive government management of minority sexual health equity.

While Larry Kramer's argument provided insight to the socio-economic inequalities experienced by *gay* PLWHA in NYC's pre-HAART therapy era (1981-1996), it failed to capture

the socio-economic inequalities experienced by *racial* minorities living with HIV and AIDS, particularly racial minorities who concurrently identified as LGBTQIA+ living with HIV and AIDS. Referring back to the Federal Health Policy Act of 1988, the ending clause of Senator Jesse Helms' amendment, to "[Prohibit] funds from being used to provide counseling that promotes or encourages... intravenous substance abuse" (AIDS Federal Policy Act of 1988), aimed its intentions at minority persons living with HIV and AIDS, along with an additional amendment, S.Amdt.1982, 'To provide that none of the funds provided under this Act or an amendment made by this Act shall be used to provide hypodermic needles or syringes' (AIDS Federal Policy Act of 1988). The implicit intent of Helms additional amendment was to target Black and Latino communities disproportionately affected by the intravenous drug-use epidemic. Given the concentration of HIV infection in Black and Latino persons living in NYC at the time of the Helms' amendment and "... the concentrated drug markets that have historically targeted many urban, minority communities, it is not surprising that throughout the epidemic, black and Hispanic IDUs have been disproportionately burdened by HIV and AIDS" ("Overview of HIV among injection drug users in New York City: racial/ethnic disparities").

The discussion of Senator Helms's amendments to the AIDS Federal Policy Act of 1988 should demonstrate how access to *economic resources* for PLWHA in NYC was complicated by issues regarding the *political identities* of PLWHA regarding race, sexuality, and their intersections. These issues of political economy were intensified by the highly centralized resource creation for HIV and AIDS healthcare, where the prejudiced political view of a single Congressperson could affect the administration and implementation of public health resources at the local level.

The issues in the political economy of HIV and AIDS resulting from a highly centralized creation of resources combined with a local administration and implementation of those resources affected not only the usage of the congressionally appropriated funds- as was the intent of Senator Helms' amendment- but also the composition of those funds. From the beginning of the epidemic, federal funds have constituted the majority of all funds for HIV and AIDS healthcare in the United States. The composition of public and private economic and financial resources for HIV and AIDS healthcare, compared to spending on most other types of healthcare, reflects a much larger percentage of federal spending as a percentage of total national spending. For example, in 2015, while public spending on all healthcare in the United States was estimated at 50.4%[4] of total national spending on all healthcare, less than the average for high income countries of 64.2% federal spending on HIV/AIDS healthcare as a percentage share of all national HIV/AIDS healthcare spending was estimated at 72.6% less than the average for high income countries[5] of 86.3% (Global Burden of Disease Health Financing Collaboration Network 2018). Whereas the average federal spending per prevalent case of HIV for high income countries in 2015 was estimated at $4,869, in the United States the federal spending per prevalent case of HIV was nearly 1.5x less, at $2,969.3 (IBID *). Importantly, federal spending on HIV and AIDS consists of both discretionary and mandatory funding, typically consisting of nearly 1/3 discretionary funds and 2/3 mandatory funds, on average (KFF 2).

With public spending comprising an outstanding majority of all spending on HIV and AIDS in the United States, and with local and state public health programs largely dependent on federal funds, the following argument pertaining to NYC's local public health program for

[4] Values from the Lancet study are expressed in 2017 PPP adjusted US dollars.
[5] World Bank country income classification.

PLWHA, instituted by the NYC DOHMH, recognizes the challenges presented by a political economy with a high degree of centralization in the creation of financial and economic resources combined with a local implementation and administration of those resources.

An example of a case where the New York City Department of Public Health and Mental Hygiene's goal of reducing disparities in public health for PLWHA at the local level coincided with the creation of economic resources for PLWHA by the federal government for reducing disparities in HIV healthcare is provided by the initiative of the Center for Disease Control in 2014, which offered grant PS14-1403, for 'Capacity Building Assistance for High-Impact HIV Prevention' to health departments and health care providers for PLWHA, with an intention to 'reduce HIV related morbidity, mortality, and disparities across the United States and its territories' (CDC prevention video https://www.youtube.com/watch?v=GLmNeeernH4). The Center for Disease Control's funding for HIV and AIDS is provided by the discretionary funds by the federal government for HIV and AIDS. The CDC's annual funds are a part of the Department of Health and Human Services (DHHS) budget proposal, first reviewed by the Office of Management Budget (OMB) in the Executive Branch for the President's Annual Budget Request, then subject to Congressional revision. As part of the discretionary funds provided by Congress for HIV and AIDS, the CDC's budget and consequently its ability to offer economic and financial resources to local health departments like the NYC DOHMH for PLWHA is dependent on the political view of public health embodied by several branches of government, in particular the Executive Branch. The New York City Department of Health and Mental Hygiene was a recipient of the grant in 2014 and implemented the funding in its 'End the

Epidemic' program-the subject of this paper- allowing for *potential* improvements in public health disparities faced by PLWHA in New York City.

An example of a case where the NYC DOHMH's goal of reducing disparities in public health for PLWHA was at odds with the creation of economic and financial resources for PLWHA by the federal government at the national level is provided by the initiative of the Office of Management and Budget of the Executive Branch to reduce the funding for Housing for Persons with AIDS (HOPWA) program by $63,000,000. (https://khn.org/news/trumps-budget-offers-291m-to-fight-hiv-in-u-s-but-trims-overseas-efforts/). HOPWA's funds are an item of the annual budget request of the Office of Housing and Urban Development (HUD) of the Executive Branch, then approved by the Office of Management and Budget (OMB) for the President's Annual Budget Request, then subject to further congressional revision. New York State typically receives the most funding for HOPWA (CDC); as New York State implements the funds proportional to previous and current HIV and AIDS diagnoses (HUD 2), New York City PLWHA are the main beneficiaries of Congressional spending. New York City public administrator Steve Hemraj, the NYC DOHMH's former chair of HIV/AIDS Service Administration (HASA), the department which oversees the implementation of HOPWA in NYC for PLWHA, noted that "People who are stably housed, they have better health outcomes," and that "If they have a place to live, they keep their doctors' appointments, they can store their medication, they're comfortable, they live happier lives" (Aging in Place 1). With a major reduction in funding for HOPWA actuated at the federal level of HIV and AIDS resource

creation, the NYC DOHMH faces constraints in its ability to pursue reductions in health disparities for PLWHA in NYC.

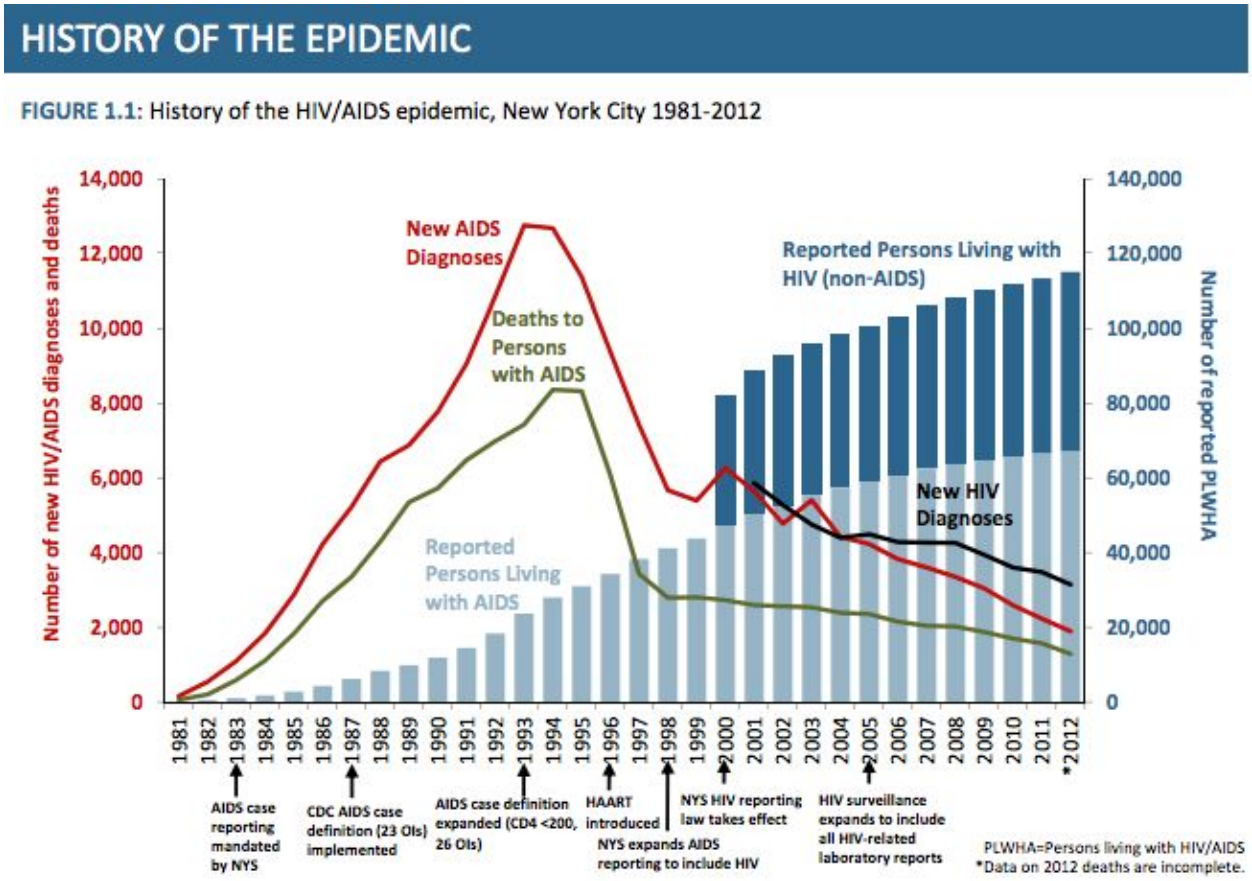
In either case, reductions in the socio-economic inequalities that contribute to health disparities for PLWHA in are dependent on the creation of economic and financial resources by the federal government and the consequent administration and implementation of those resources by local public health departments. The paper presents the persistent health disparities experienced by PLWHA in NYC and the socio-economic inequalities which contribute to these HIV and AIDS health disparities. The author hopes to present public policy suggestions which can improve the health and socio-economic status of all PLWHA in NYC. When the *necessity* of life saving HIV medicine and health care is realized by the community of PLWHA in NYC and communities, it can begin to realize its *capability* to reduce intersecting and broad socio-economic inequalities in public health.

Inequality as a Comorbidity in the NYC DOHMH's 'End the Epidemic' Program

American psychologist Stephen Morin, observing the socio-economic challenges of the HIV epidemic at the peak of the crisis in the late 1980s, remarked that 'the social, cultural, economic, and political reaction to the HIV and AIDS epidemic' would be a crucial 'part of the pathology of AIDS and the virus itself' (Morin 1988, as cited in Pellowski 2003). Since 1981, public health experts in the United States have noted a wide range of socio-economic inequalities which contribute to health disparities for PLWHA. The 'socio-economic pathology' of HIV has resulted in what public health experts regard as a 'pandemic of the poor' (Pellowski 2013). The national 'pandemic of the poor' is the status quo for NYC's ongoing HIV and AIDS epidemic.

While over 40% of NYC residents live at or near the poverty line (nyc poverty measure tool 2017), more than 50% of all new HIV infection diagnoses in NYC in 2018 were among persons living *greater than* 20% below the federal poverty line (nyc 2018 surveillance report), and over 80% of all new HIV infection diagnoses in NYC in 2018 were amongst persons living *greater than* 10% below the federal poverty line (nyc 2018 surveillance report).

The paper recognizes the interrelationship between the high capital costs associated with novel biomedical technology for HIV and AIDS healthcare and the current characterization of the HIV and AIDS epidemic in New York City as a 'pandemic of the poor;' simultaneously, the paper recognizes the role the development of novel biomedical technology in reducing the new rate of HIV infection and the rate of new AIDS diagnoses. Apparent in Figure 1.1 from the 2012 New York City Department of Health and Mental Hygiene's 'Annual HIV Surveillance Report,' the marked decrease in morbidity from AIDS-related illnesses and persons living with HIV and AIDS, concomitant with advances in HIV and AIDS treatment options beginning in 1996.



The shift occured due to the success of antiretroviral (ARV) therapy. 'Highly active antiretroviral therapy' (HAART) in HIV and AIDS healthcare allowed for widespread viral suppression, an increased quality of life, and an increase in life expectancy. In 1995, the Federal Drug Administration approved the HAART therapy pharmaceutical Saquinavir, and 'AIDS morbidity and mortality fell almost immediately in the industrialized world, and the way we think about AIDS also changed forever' (HRSA Ryan White 1). Despite advances in life expectancy, quality of life, and prospects for effective treatment options for PLWHA in the late 1990s, the socio-economic improvements from said advances were not borne equally across all socio-economic groups. Just ten years after the successful introduction of HAART therapy in the United States, in its 'Applying Public Health Principles to the HIV Epidemic' 2005 report, the

World Health Organization noted that despite the advances in HIV and AIDS healthcare, gross disparities in HIV and AIDS health care persisted:

> Disease transmission continues at the same or, possibly, a slightly higher rate. High risk behavior remains common and is increasing in some groups. Late diagnosis of infection is common. Notification of the partners of infected persons is rare. Black and Latino patients are less likely than white patients to receive optimal care. Few patients in care receive counseling about preventing transmission of the virus. All these trends are apparent in New York City, which is home to one in six of all U.S. patients with AIDS (Frieden *).

The economic and social inequalities in New York City's public health system, to credit Stephen Morrin, had become 'as much a part of the pathology of AIDS as the virus itself' (Morrin 1988, in Pellowski 2003).

Continued advances in biomedical research for HIV and AIDS resulted in yet another paradigmatic shift in the administration of public health programmes for HIV and AIDS, when the FDA approved pharmaceutical Truvada, in 2012, as a pre-exposure prophylaxis (PrEP) therapy capable of preventing HIV transmission with proper usage. With the prospect for effective *preventative treatment* alongside effective HAART therapy for those with a *current diagnosis*, public health experts in the United States began to envision a public health system with a falling rate of new HIV infection and an eventual phasing out of HIV as a public health crisis. In 2014, Governor Andrew Cuomo announced a public health program to address the ongoing HIV epidemic in NYS, entitled the 'End the Epidemic' program. The goal of the program is to achieve New York State's *first ever* reduction in 'HIV prevalence.'[6] The program began in 2014, with hopes of targeting the UNAIDS '90-90-90' target by 2020, wherein 90

[6]Prevalence refers to the 'stock' of PLWHA within a given geo-spatial and temporal unit.

percent of persons with HIV infection are identified, 90 percent of persons with HIV infection are in treatment, and 90 percent of persons in treatment for HIV are virally suppressed (UNAIDS). Of the program's extensive goals, the New York State Department of Health reports three goals for the implementation of its program:

1. Identifies persons with HIV who remain undiagnosed and link them to health care.
2. Links and retains persons diagnosed with HIV in health care to maximize virus suppression so they remain healthy and prevent further transmission.
3. Facilitates access to Pre-Exposure Prophylaxis (PrEP) for high-risk persons to keep them HIV negative.[7] (NYS 1)

As '...about 80% of the state's HIV epidemic [is] concentrated in New York City' (UNAIDS 16) the New York State Department of Health's 'End the Epidemic' program goals cannot be achieved without improvements in New York City's implementation of its own 'End the Epidemic Program' during the period. The New York City Department of Public Health and Mental Hygiene reports four goals for the implementation of its own 'End the Epidemic' program:

1. Increase access to HIV prevention services, including pre-exposure prophylaxis (PrEP) and post-exposure phylaxis (PEP) across New York City
2. Promote innovative, optimal treatment for all New Yorkers living with HIV/AIDS
3. Enhance methods for tracing HIV transmission and identifying outbreaks

[7] https://www.health.ny.gov/diseases/aids/ending_the_epidemic/

4. Improve sexual health equity for all New Yorkers through targeted outreach to priority populations and enhancement to sexual health clinics. (www.nyc.gov/site/doh/health..)

In reference to the End the Epidemic Program, the NYC DOHMH, recently in December of 2019, announced its achievement of the '90-90-90' target. Incumbent Deputy Commissioner for the Division of Disease Control of the New York City Department of Health and Mental Hygiene (NYC DOHMH), Demetre Daskalaskis commented on the achievement: "Once a city known for being the epicenter of the U.S. HIV epidemic, New York City is now the epicenter of the end of the domestic HIV epidemic" (POZ 1). Despite the success of the NYC DOHMH in achieving its '90-90-90' target, socio-economic inequalities and health disparities for PLWHA in NYC are increasing.

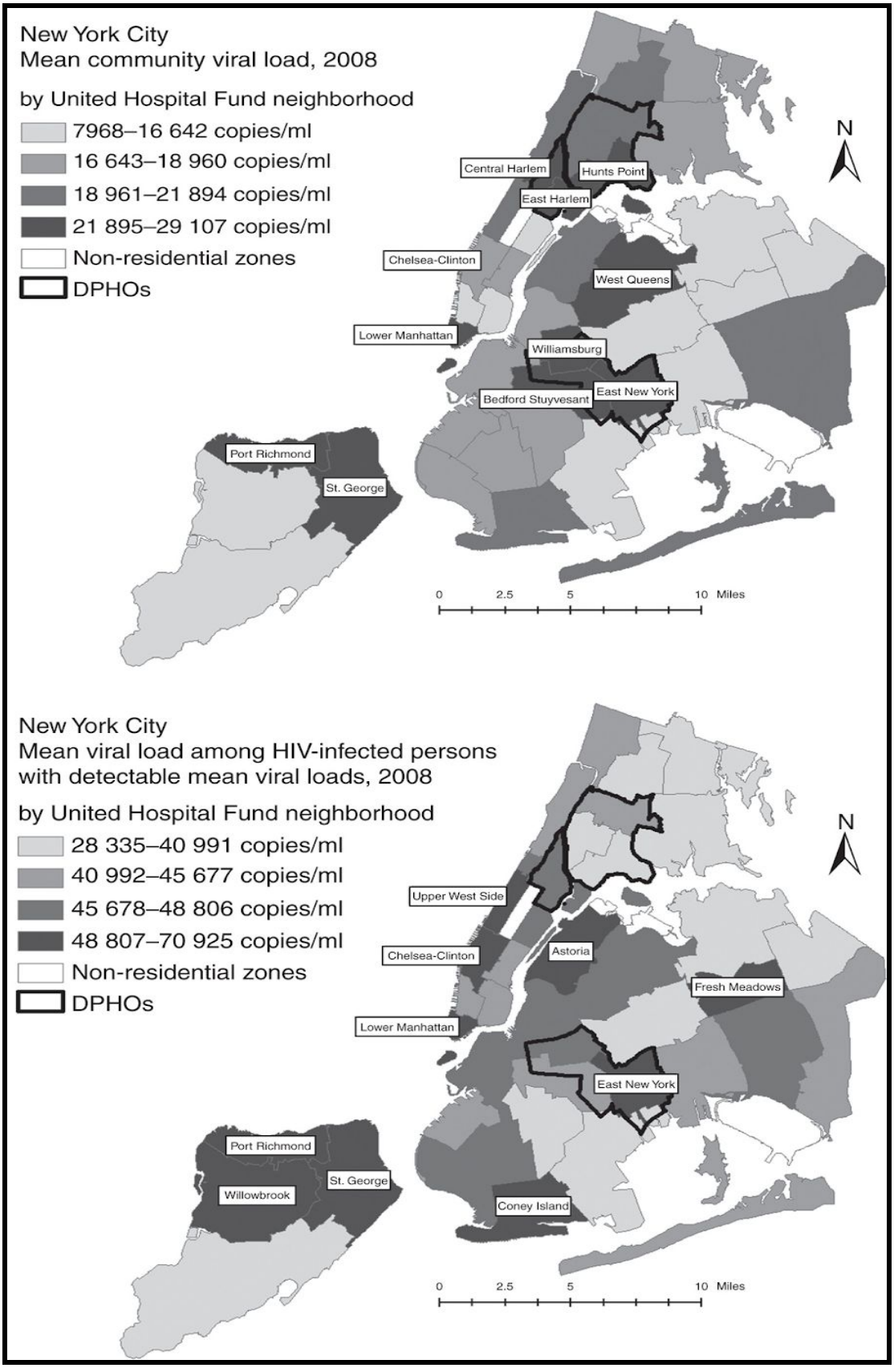
I: Sexual Health Equity

Sexual health disparities experienced by PLWHA in NYC cannot be properly understood outside of the socio-economic inequalities experienced by PLWHA in their *neighborhood*- the preferred geo-spatial unit of comparison for health disparities (Blahov, Latkin 2011). With the exception of perinatal[8] transmission- representing less than 1% of new infections annually- new HIV infections in NYC result from social choices, namely sex between men and intravenous substance use. These choices are regarded as 'high-risk' choices as are the persons who make these choices. This section argues that while these social choices may put a person at a higher risk for an HIV infection, the history of socio-economic inequality and HIV and AIDS health disparities in NYC neighborhoods makes their social choices of an unequal 'high risk.' To

[8]Mother-to-child.

illustrate this point, consider the 'high-risk' social choice of unprotected sexual contact between MSM for two persons, one living in Brownsville, Brooklyn- a neighborhood with a historically high concentration of HIV infection- and the Upper East Side, Manhattan-a neighborhood with a historically low concentration of HIV infection. Though unprotected sexual contact between MSM puts an individual at 'high-risk' for an HIV infection, regardless of the context of the decision, the history of socio-economic inequality in HIV and AIDS public health care in Brownsville, Brooklyn puts the 'high-risk' social choice of MSM in that neighborhood at an unequal risk. The unequal risk results from unequal 'community viral loads.' A higher community viral load can result from a lower level of viral suppression, late diagnosis of an HIV infection, or poor adherence to HIV and AIDS medicine- all of which are indicators of incomplete or improper HIV and AIDS healthcare (citation). In 2008, Researchers from the NYCDOHMH Division of Disease and Control and Bureau of HIV and AIDS calculated HIV 'community viral load'[9] across NYC neighborhoods, presented in Figure 2 below.

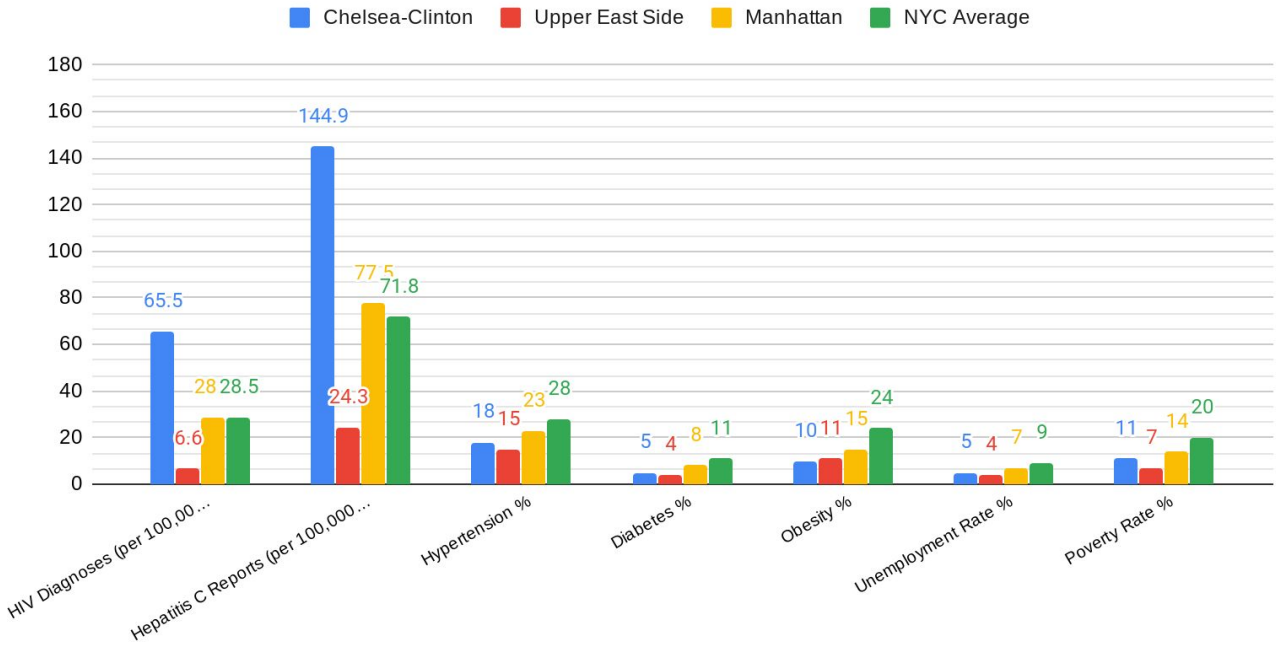
[9] Cite the article for community viral load definition


New York City
Mean community viral load, 2008
by United Hospital Fund neighborhood
7968–16 642 copies/ml
16 643–18 960 copies/ml
18 961–21 894 copies/ml
21 895–29 107 copies/ml
Non-residential zones
DPHOs
Central Harlem
Hunts Point
East Harlem
Chelsea-Clinton
West Queens
Lower Manhattan
Williamsburg
Bedford Stuyvesant
East New York
Port Richmond
St. George
N
0 2.5 5 10 Miles
New York City
Mean viral load among HIV-infected persons
with detectable mean viral loads, 2008
by United Hospital Fund neighborhood
28 335–40 991 copies/ml
40 992–45 677 copies/ml
45 678–48 806 copies/ml
48 807–70 925 copies/ml
Non-residential zones
DPHOs
Upper West Side
Chelsea-Clinton
Astoria
Fresh Meadows
Lower Manhattan
East New York
Port Richmond
St. George
Willowbrook
Coney Island
N
0 2.5 5 10 Miles

Neighborhoods like Brownsville, Brooklyn, are part of a larger geo-spatial community with a HIV viral load more than double that of less-affected areas (Fabienne la farque). Thus, when comparing an act of unprotected sex between men in Brownsville and the Upper East Side, both instances of sexual choice should be considered 'high-risk,' though the 'high-risk' sexual choices of an unprotected sexual act between MSM in Brownsville puts these men at a *higher* risk for an HIV infection because a history of socio-economic inequalites and persistent health disparities for HIV and AIDS patients has led to a higher community viral load in the neighborhood within which their 'high-risk' social choices are made. Importantly, these health disparities are multi-dimensional, as neighborhoods which experience an epidemic for one illness often concurrently experience another epidemic of a different illness, or a 'syndemic'(Latkin, German, Blahov 2014 'neighborhoods and hiv').

A brief comparison of health outcomes for two New York City neighborhoods, Chelsea-Clinton and the Upper East Side, provides an example of how neighborhoods with different social networks, composed of different social choices, contribute to disparities in health outcomes and 'syndemics.' Data from the NYC DOHMH 2018 Community Health Profile Map Atlas was used to compare healthcare, health outcomes, and socio-economic indicators for the neighborhoods, represented in Panel 1 below.

Panel 1: Health Outcome & Economic Stress Comparisons for Chelsea-Clinton and Upper East Side



In several dimensions of health, healthcare, and economic stress, the two neighborhoods are quite similar. The rate of poverty[10] in Chelsea-Clinton is 11% which is 4% higher than the Upper East Side, the lowest rate of poverty in the City of New York. Both neighborhoods are below the Borough of Manhattan average of 14% and well below the New York City average of 20%. The rate of unemployment[11] in Chelsea-Clinton is 5% which is 1% greater than the Upper East Side, which experiences the lowest rate of unemployment in New York City. The rate of unemployment in both neighborhoods is below both the Borough of Manhattan and New York City averages. Looking at health care and health outcomes, the rates of obesity,[12] diabetes[13], and

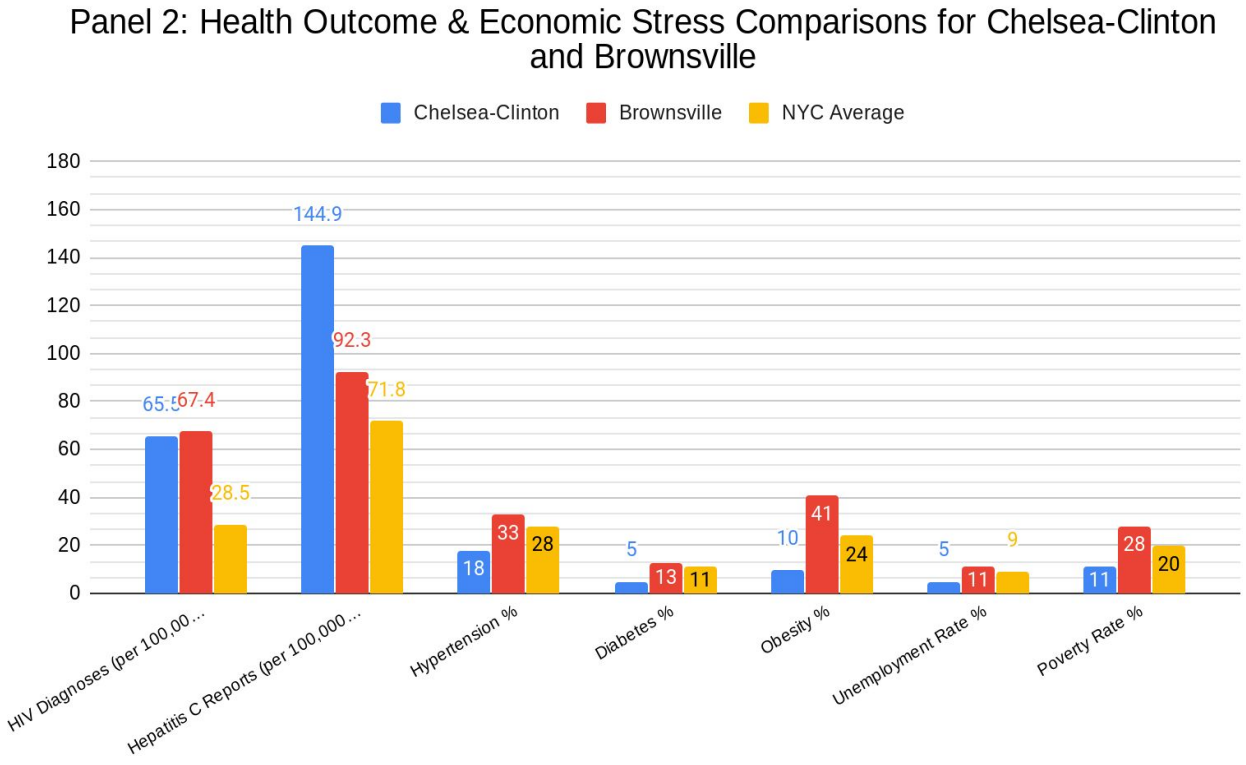
[10] Percentage of people living below 100% of New York City's calculated poverty threshold based on income and necessary expenses. NYC DOHMH
[11] Percentage of the civilian (non-military) labor force (ages 16 and older) who are unemployed. NYC DOHMH
[12] Percentage of adults ages 18 and older who have obesity (Body Mass Index of 30 or greater) based on self-reported height and weight. NYC DOHMH
[13] Percentage of adults ages 18 and older who report ever being told by a healthcare professional that they have hypertension, also known as high blood pressure. NYC DOHMH

hypertension[14] are lower for both neighborhoods than the rate for the Borough of Manhattan and well below the rate for New York City. Despite the similar health outcomes discussed above, Chelsea-Clinton and the Upper East Side experience dramatically different health outcomes for HIV and Hepatitis C infections. The main transmission mechanism for HIV and Hepatitis C virus is sexual contact (citation perhaps) and thus the social choices of social groups with their own sexual networks in these neighborhoods are an important factor in health outcomes disparities. As the Chelsea-Clinton neighborhood is historically important for MSM in NYC, particularly gay and transgender men, sexual networks for MSM are highly concentrated in the Chelsea-Clinton neighborhood. Comparing the two neighborhoods, Chelsea-Clinton experiences nearly 5.96 times the rate of reported Hepatitis C infections and 9.92 times the rate of new HIV infections. In 2018, the rate of reported Hepatitis C infections in Chelsea-Clinton was the highest and the rate of new HIV infections was the third highest in New York City (NYC DOHMH atlas 2018) Thus, historical disparities in the rate of new infection for MSM in NYC combined with the concentrated sexual network of MSM in Chelsea-Clinton contribute to the major disparities of a 'syndemic' nature for sexually transmitted infections when compared to the Upper East Side, despite the broader setting of lower economic stress and better health outcomes experienced by both neighborhoods. There are thus clear disparities in sexual health equity based on sexual networks and the social choices which constitute those networks. Major disparities in sexual health equity and sexual health outcomes for persons with marginalized sexualities is a structural feature of the NYC HIV and AIDS epidemic. Historical surveillance data for new HIV infections in NYC evidences an estimated annual percentage change (EAPC) in the rate of new

[14] Percentage of adults ages 18 and older who report ever being told by a healthcare professional that they have diabetes. NYC DOHMH

HIV infections of -5.2% between 2001-2018; however, when the rate of new HIV infections is decomposed by transmission mechanism, MSM experienced only a -1.5% EAPC compared to -7.9% EAPC for the heterosexual mechanism of transmission (2018 NYC DOHMH HIV surveillance report. Further, transgender people with sexual contact was the only sexual transmission mechanism to experience an *increase* EAPC in new HIV infections during the period, though the results are statistically insignificant due to small sample size (NYCDOHM ibid 2018).

While historical sexual health inequalities for marginalized sexualities contribute to disparities in the rate of new HIV infection across neighborhoods, economic inequalities among neighborhoods contribute to health disparities when comparing neighborhoods with similar rates of new HIV infection. Data from the NYC DOHMH 2018 Community Health Profile Map Atlas was used to compare healthcare, health outcomes, and socio-economic indicators for two neighborhoods with high rates of new HIV infection, Chelsea-Clinton and Brownsville, represented in Panel 2 below.

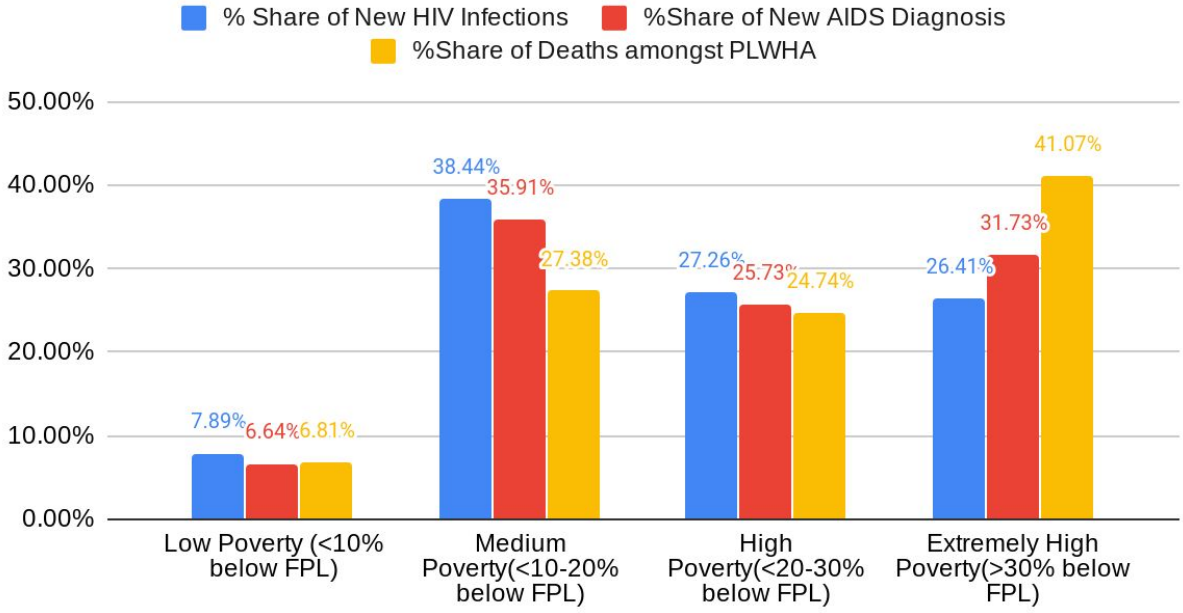


Despite similar rates of HIV diagnosis rates and reports of Hepatitis C , major disparities exist between the two neighborhoods for non-HIV health outcomes: Brownsville experiences over one a half times the rate of hypertension, more than double the rate of diabetes, and nearly two and a half times the rate of obesity of Chelsea-Clinton. These disparities are predicated on major economic inequalities between the two neighborhoods, as Brownsville experienced nearly twice the rate of poverty and unemployment rate of Chelsea-Clinton in 2018. Importantly, these economic inequalities contribute to health disparities related to health outcomes due to long-term HIV infection. It is thus not surprising that when comparing HIV viral load- the primary measure of long-term HIV healthcare (cite Dr. Fauci), “Chelsea-Clinton had, as expected, a lower proportion of persons with detectable viral loads. Similarly, it also had a lower HIV-related death

rate...” compared to other neighborhoods with high HIV prevalence and high new rates of infection (Lafarque 2018).

As the leading cause of death amongst PLWHA in NYC between 2001 and 2015 switched from HIV infection related deaths to non-HIV infection related deaths, with a decrease in the percentage of HIV related deaths from 66% in 2001 to 34% in 2015 (NYC Annual HIV surveillance report, 2016 only), the multidimensional health inequalities related to poverty and unemployment experienced by PLWHA in high HIV diagnosis areas becomes an increasingly important component of disparities in long term health outcomes for PLWHA in New York City. Panel 4 below compares the rate of new HIV infection with mortality amongst PLWHA by poverty status for 2018.[15]

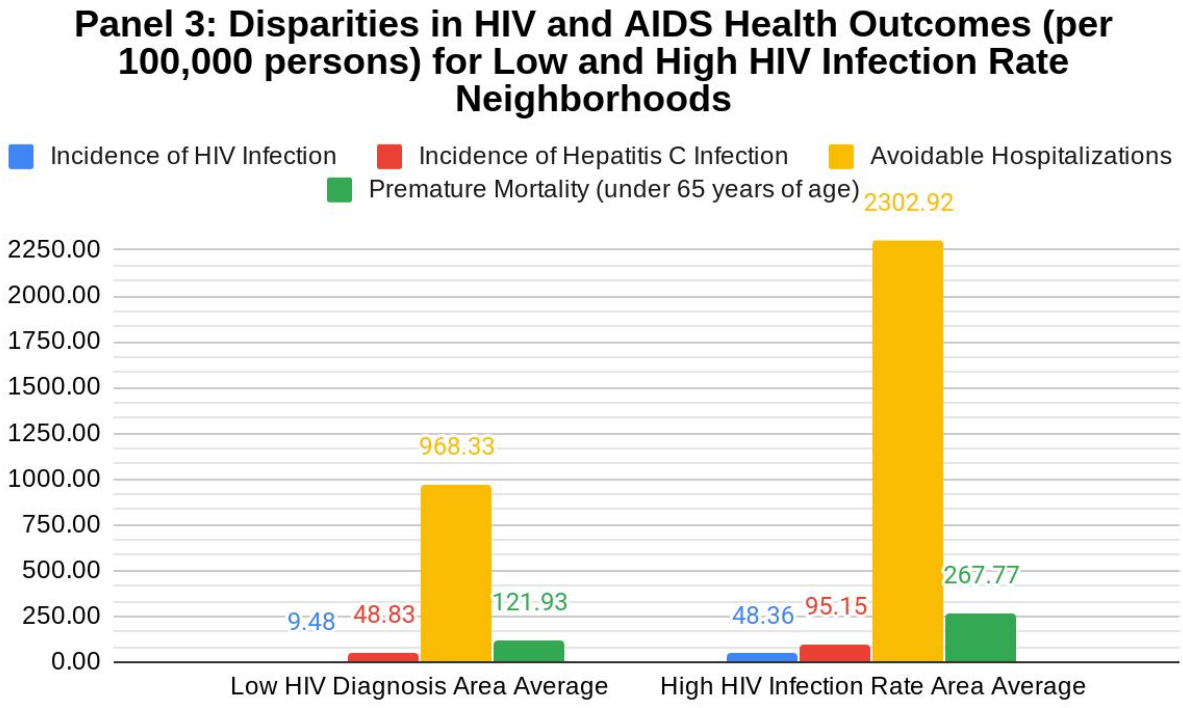
Panel 4: % Share of New HIV Infections, AIDS Diagnoses, and Deaths by Poverty Level among PLWHA in NYC (with known poverty status) in 2018



[15] Define poverty status by nyc dohmh community survey

Economic inequalities thus become an increasingly important contribution to disparities in HIV and AIDS health outcomes in the progression of an HIV infection into an AIDS diagnosis.

The broad context of health disparities matters for public policy for PLWHA, within the economic and sexual health inequalities discussed above. The 2018 Map Atlas incorporates data from the NYC DOHMH's 20 HIV Surveillance Registry, wherein 'high HIV diagnosis areas' refers to neighborhoods with a rate of new HIV diagnoses greater than 34.9 persons per 100,000 persons, whereas 'low HIV diagnosis areas' refers to neighborhoods with a rate of new HIV diagnoses lower than 14.4 persons per 100,000 persons and still statistically significant (2018 map atlas). Panel 3 below compares averages of broader health outcomes in the 2018 Map Atlas for all 'high HIV diagnosis areas' and all 'low diagnosis areas' in NYC.

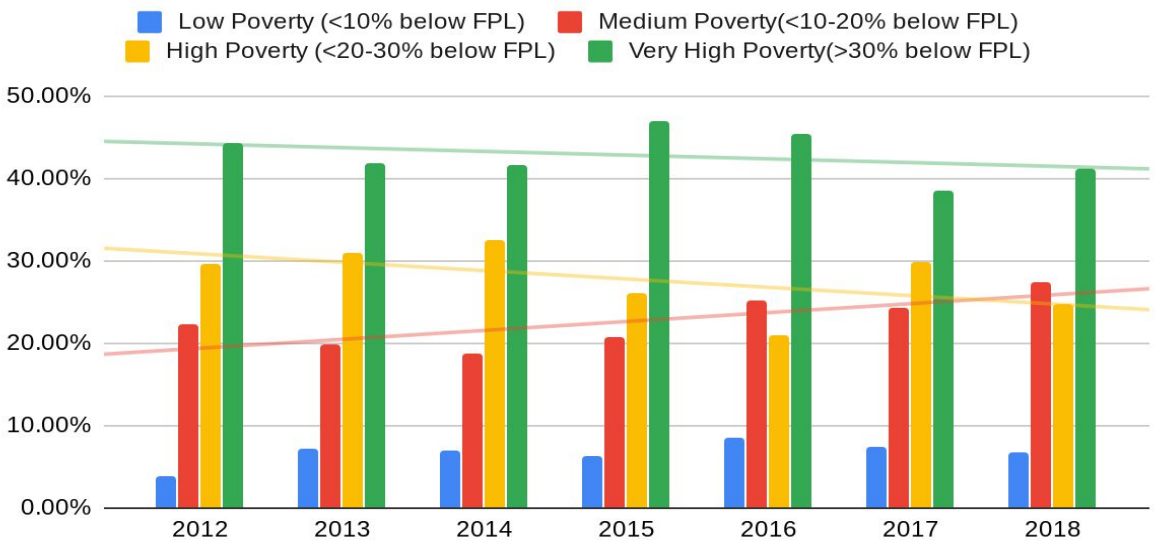


High HIV diagnosis areas-with over fives times the incidence of new HIV infection of low HIV diagnosis areas- concurrently experienced nearly double the rate of obesity, more than one an a half times the rate of diabetes, a higher rate of hypertension, nearly double the incidence of Hepatitis C infection, and more than double the rate of psychiatric hospitalizations of low HIV diagnosis areas. Inequality in access to health care is nuanced: though only slight differences in coverage exist (NYC DOHMH 2018), the rate of avoidable hospitalizations and premature mortality in 2018 high HIV diagnosis areas was more than double that of low HIV diagnosis areas, implying that even though access to health care may be more equal, the quality of care received by persons in these areas is highly unequal. Identifying disparities for PLWHA within a broader set of health outcomes when comparing low and high HIV diagnosis neighborhoods evidence the broader context of health disparities experienced by PLWHA.

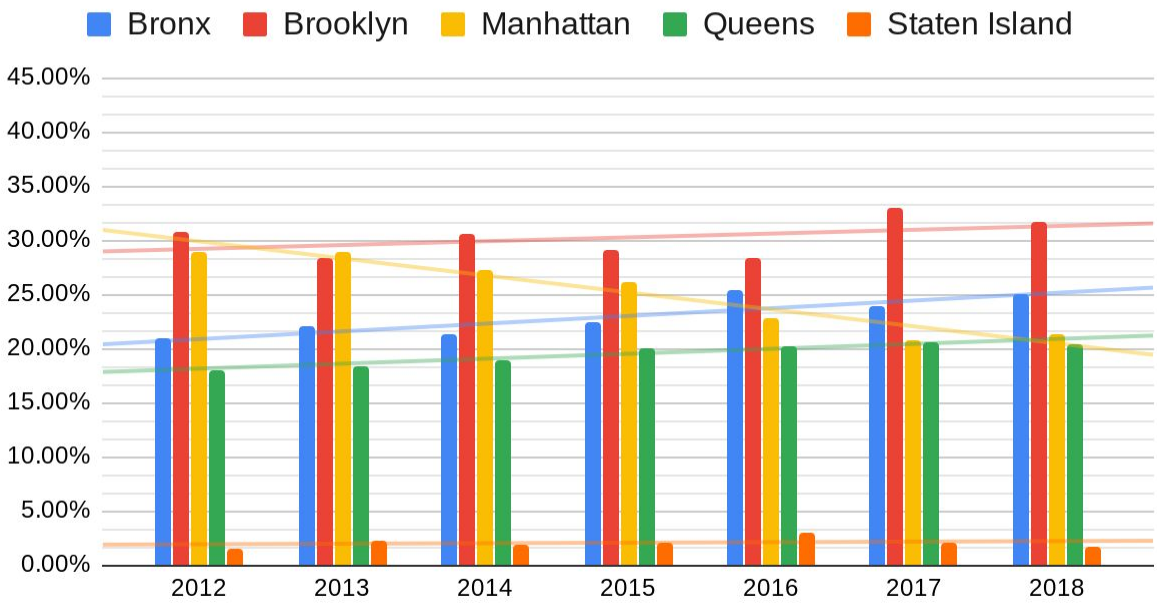
Health Disparities in the Era of Preventative Treatment for HIV and AIDS: 2012-2018

To examine changes in health disparities in new HIV infections for social and economic groups during the 'End the Epidemic' program, compositions of new HIV infection using cross-sectional data for 2012-2018, the period covering the commercial availability of PrEP through the 'End the Epidemic' program, from the NYC DOHMH 'Annual HIV Surveillance Report,' were compared for social and economic groups, presented in panels 6-10 below

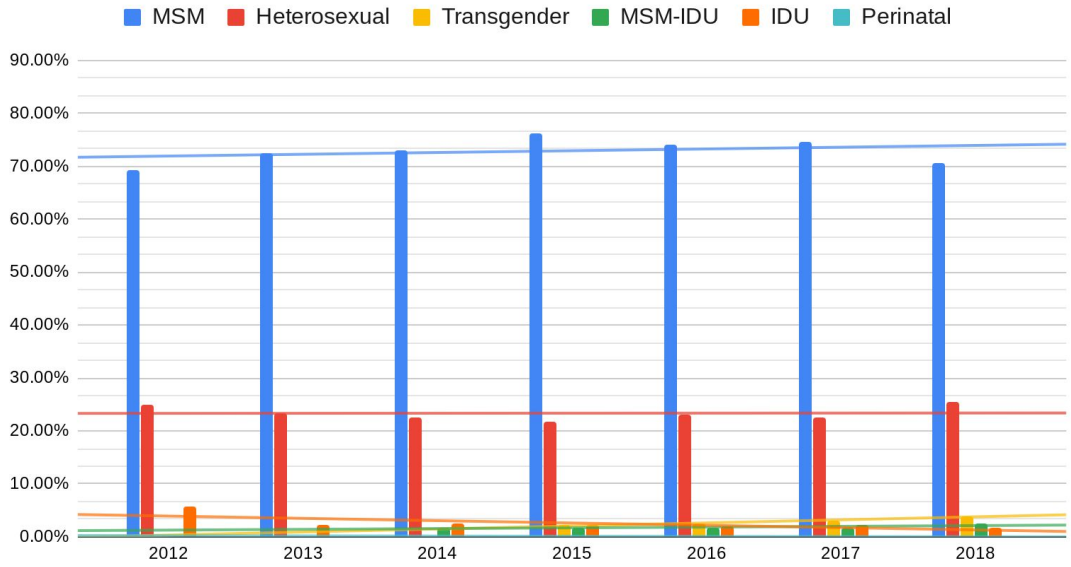
Panel 6: Composition of New HIV Infections by Poverty Level for PLWHA in NYC (with known poverty status), 2012-2018



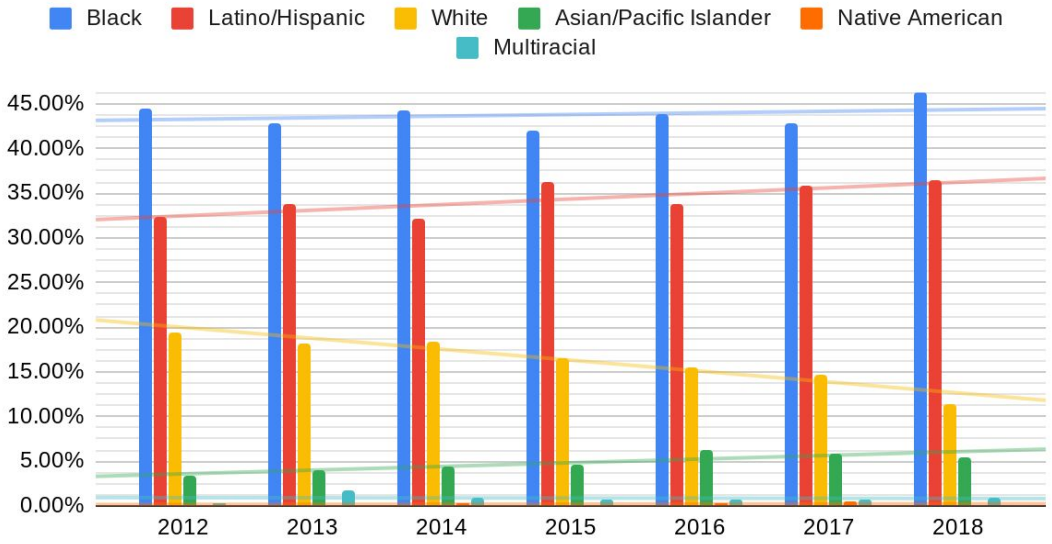
Panel 7: Composition of New HIV Infections in NYC for PLWHA by Borough (with known borough of diagnosis), 2012-2018

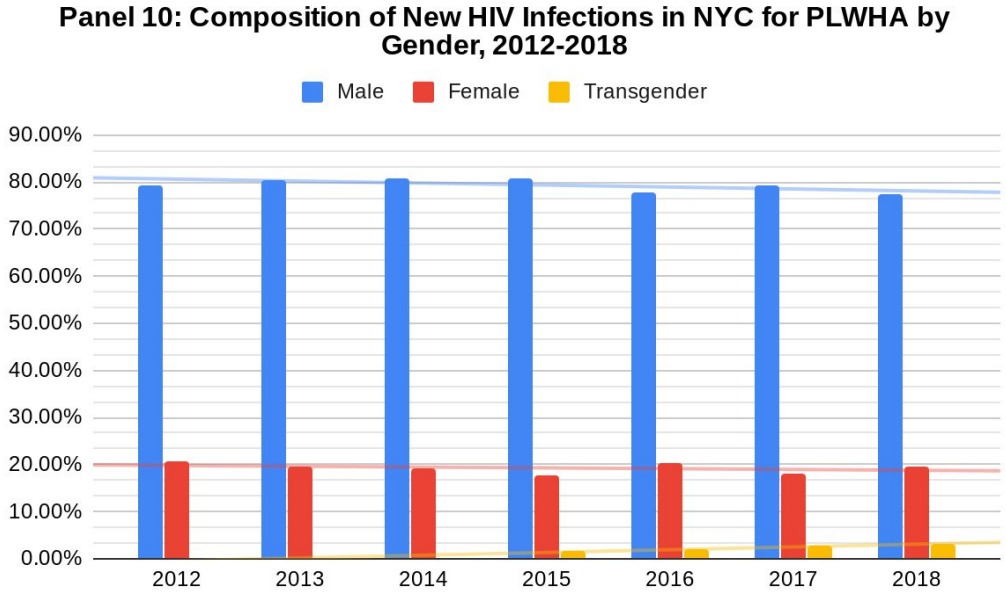


Panel 8: Composition of New HIV Infections in NYC for PLWHA by Mechanism of Transmission (with known mechanism), 2012-2018



Panel 9: Composition of New HIV Infections in NYC for PLWHA by Race/Ethnicity, 2012-2018





Panels 6-10 evidence that during the period, new HIV infections were increasingly composed of (1) persons living in medium poverty (2) persons from the Bronx, Brooklyn, Queens, and Staten Island (3) MSM and transgender persons with sexual contact and (4) Black, Hispanic, and Asian/Pacific Islanders, concurrently decreasingly composed of (1) persons living in low, high, and very high poverty (2) persons from Manhattan (3) heterosexuals and (4) Whites. (The composition of HIV infections remained relatively constant by gender given the revised reporting in 2015 to include transgender persons).

PLWHA are composed of intersecting socio-economic statuses. In NYC, the intersection of race, sexuality, and class are necessary in decomposing the increasing concentration of new HIV infections in Black MSM from poor neighborhoods in Brooklyn and Upper Manhattan. NYC HIV surveillance data for men between ages 13-59 in 2018 evidenced a diagnosis rate for Black men nearly 1.5 times that of Hispanic/Latino men and over five times that of White men (NYC DOHMH Surveillance 2018). For women aged 13-59, the health disparities are more concentrated, as the rate of HIV diagnosis is over three times the rate of Hispanic/Latina women, and over eleven times that of White

women (ibid). Equally important, the racial groups experiencing health disparities live in neighborhoods that report high levels of unemployment and poverty (2018 atlas map), also contributing further to these outcomes. With new HIV infections in NYC composed of (1) an increasing concentration of MSM, (2) a persistent concentration of men, and (3) an increasing concentration of persons living below the FPL during the 'End The Epidemic' program, the NYC DOHMH must prioritize reducing health disparities experienced by Black MSM in poor neighborhoods with persons living below the FPL.

To illustrate the extent of the health disparities faced by NYC PLWHA in relation to their socio-economic statuses, Table 1.1 was constructed, adapting existing health disparity reporting standards from the NYC Health Disparity Report for Colorectal, Cervical, and Breast Cancer in 2018 by Myers et al. Table 1.1 features the number of potential new infections averted in 2018 by applying the lowest percentage of new infection within a population, by race and transmission mechanism, to the other subgroups within the race and transmission mechanism subgroups. The data from the 2018 NYC DOHMH was used to compile the percentage of new infections by race and transmission mechanism, accompanied by United States Census data for NYC in 2018. (Grey 2019) was used to estimate the size of NYC's MSM population (around 5% of men), accompanied by estimates of the percentage of the NYC heterosexual population.[16]

Infections Averted From Reduction in Health Disparities (2018)[17]

[16]The estimated percentage of heterosexual United States adults is about 97%. In New York City the percentage is slightly lower, at 95.5%.

[17] Explain calculations in previous paragraph, citing the grey 2019 study

	Total New HIV Infections, All New York City (2018)	New Infection as a Percentage of Population	Total Number of New Infections Averted with Reduction in Inequalities
NYC Total	1,917	0.2310%	N/A
Race			
White	219	0.0062%	0
Black	879	0.0438%	755
Latino	697	0.0286%	547
Asian/PI	104	0.0991%	32
			1334
Transmission Mechanism			
MSM[18]	997	0.5005%	904
Heterosexual[19]	358	0.0043%	0
			904

If the percentage of new infections in 2018 amongst White persons was achieved by all other racial groups, over 68% of all new HIV infections in NYC would be averted. Applying the same princicple to HIV transmission mechanisms, if the percentage of new infections in 2018 amongst Heterosexual persons was achived by MSM, over 66% of all new infections would be averted. When applying the percentage of new HIV infection in NYC's White population in 2018, Blacks would avert 755 new HIV infections, more than any other subgroup. When applying the percentage of new HIV infection in NYC's Heterosexual population in 2018 to MSM, 904 new HIV infections would be averted. From these measures, the most effective focus of public policy

[18] (Grey 2019) argue MSM represents ~5% of NYC residents.
[19] Explain calculation in graphs.

in reducing health disparities for new HIV infections in NYC going forward, for the NYC DOHMH, would be to allocate more economic, political, and healthcare resources to the Black and MSM communities of New York City.

'Increasing Access to HIV Prevention Services': PRe-Exposure Prophylactic

In the formulation of New York State and New York City's respective 'End the Epidemic' programs, PrEP is the central mechanism by which new HIV diagnoses and thus HIV prevalence is expected to decrease. In 2012, the USDA approved the use of Truvada, a combination of two drugs, *tenofovir* and *emtricitabine*, marketed under the name 'PrEP.' The acronym stands for 'pre-exposure prophylaxis.' PrEP is classified as an ARV (ant-retroviral) approved to decrease the number of HIV infections (acquired sexually) in 'high risk, seronegative' patients.[20] In the NYSDOH's three point plan of action, the drug is referred to as 'life saving' for its HIV 'transmission interrupting' capability.[21] Although the programs were initiated in 2014, the NYSDOH and NYCDOHMH formally backed the clinical legitimacy of PrEP after NYSDOH Commissioner Howard Zucker produced a letter to clinicians and stakeholders citing the potential of the drug. The letter sent to clinicians references three major studies which purported the potential benefits to implementing the drug in public health programs. In the letter to clinicians, Zucker first references the 2016 New England Journal of Medicine HIV Prevention and Treatment Network study whose '... results showed no linked transmissions when the index (HIV+) partner's viral load was fully suppressed; and... also

[20] https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60137-9/fulltext?rss=yes
Explain what seronegative means
[21] https://www.health.ny.gov/diseases/aids/ending_the_epidemic/

showed that initiating ART early reduces transmission.'[22] The Commissioner then references the PARTNER study, reported in the Journal of the American Medical Association in 2016, which found that in '... more than 58,000 condomless sexual acts there were no reported linked HIV transmissions when viral load was undetectable.[23] The Opposites Attract study is then referenced as a study specific to same-sex sexual relationships, which '... found no linked HIV transmissions in nearly 17,000 condomless sexual acts by 358 gay male couples. HIV negative partners were taking PrEP for about 5,000 of those sexual acts, which equates to roughly 12,000 sexual acts with only viral suppression as the HIV prevention method.[24] The letter provides a summary of recent publications in HIV pre-exposure prophylactic research, namely that (1) PrEP can prevent new HIV infections, (2) anti-retroviral treatment can help PLWHA achieve viral suppression, and (3) a reduction in new HIV infections could be achieved with proper implementation of PrEP and viral suppression therapy by the NYC DOHMH and its partners. Zucker provided a careful but general summary of the research presented in the letter:

> The findings from these three large-scale studies have definitively demonstrated that not only does effective antiretroviral therapy improve the individual health of each person with HIV, it also prevents the transmission of HIV to their sexual partners. (Zucker 3)[25]

Despite the medical breakthroughs in HIV transmission prevention and HIV prevalence reduction offered by properly administered PrEP for both New York State and New York City's respective 'End the Epidemic' programs, several public health advocates and prominent

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[22] Cohen MS, Chen YQ, McCauley M, et al. Antiretroviral therapy for the prevention of HIV-1 transmission. NEJM. 2016;375:830–9

[23] Rodger A., Cambiano V., Bruun T., et. al. for the PARTNER study group. Sexual activity without condoms and risk of HIV transmission in serodifferent couples when the HIV-positive partner is using suppressive antiretroviral therapy. JAMA, 2016;316(2):1-11. DOI: 10.1001/jama.2016.5148. (12 July 2016).

[24] Bavinton B., Grinsztejn B., Phanuphak N., et.al. HIV treatment prevents HIV transmission in male serodiscordant couples in Australia, Thailand and Brazil. IAS 2017, Paris.

[25] https://www.health.ny.gov/diseases/aids/ending_the_epidemic/docs/september_physician_letter.pdf

politicians have expressed concern about the socio-economic inequalities which prevent equal *access* to PREP. In May of 2019, Congressional Representative for New York's 14th District[26] Alexandria Ocasio Cortez questioned Gilead's CEO Daniel O'Day about the price of PrEP and its relation to unequal drug access and consequent health disparities. New York's 14th Congressional District comprises North-Central Queens and the East Bronx- both areas experience higher rates of new HIV infection than the NYCaverage (NYC Community Health Atlas 2018). The exchange between AOC and O'Day in the House Committee presents two views of the commodification and financialization[27] of life saving medicine, worth quoting at length:

> AOC: Mr. O'Day, you are the CEO of Gilead... Is it true that Gilead made $3 billion in profit from the sales of Truvada in 2018?
> O'Day: $3 billion in revenue.
> AOC: In revenue, thank you. The current list price is $2000 a month in the United States, correct?
> O'Day: The current list price is $1,780 in the U.S., and just to correct the $3 billion was a global figure for Truvada, for PrEP.
> AOC: So the list price is almost $2000 in the US. Why is it $8 in Australia?
> O'Day: Truvada...is still...has patent protection in the U.S., and in the rest of the world, it is generic. I can't comment on the price of the generic in Australia or generic medicine...but it is generically available in other parts of the world and will be generically available in the US as of September 2020 based on Gilead agreeing to support generic entries...
> AOC: I think it's important that we notice here that we the public, we the people, developed this drug, we paid for this drug, we led and developed all of the grounding patents to create PrEP and that that patent was owned by the public. We refuse to enforce

[26]Borough of Bronx and Queens.
[27]Language derived from (Lohmann 2018).

> it. There is no reason why this should be $2000 a month. People are dying because of it...and there is no enforceable reason for it. (Ocasio-Cortez and O'Day

In Representative Ocasio-Cortez's exchange with Gilead CEO Daniel O'Day, brought to the fore was the question of the unequal political economy of HIV and AIDS preventive medicine, where exclusionary pricing disqualifies adequate access to medicine by economically disadvantaged minority groups (in relation to race, poverty status, and sexual choice), leading to disparities in public health outcomes for the Black, MSM and poverty-stricken communities.

Importantly, PrEP is currently the only drug approved by the USDA for prophylactic HIV treatment, and thus the 'End the Epidemic' program endorses the use of one drug privately-produced by a publicly traded biotechnology company, *Gilead Sciences*. Representative Ocasio-Cortez's indicted *Gilead Sciences* for exploiting not only a publicly financed and publicly owned patent for a publicly innovated preventative HIV therapy but also the economic and therefore racial discrimination implied by not only an $1,800 a month price tag but the recurring and long term costs associated with managing PrEP therapy. Following the political exposure garnered by the exchange between the CEO and Representative- and body of literature suggesting that PREP uptake was slow among MSM (Kirby et al. 2014) and disproportionately slow for Black and Latino MSM (CDC 2019)- the Trump Administration, under the authority of Secretary of the Department of Health and Human Services, Alex Azar, filed a lawsuit against *Gilead Sciences* on November 6, 2019, laying out the grounds of the lawsuit as follows:

> Gilead's infringement of HHS patents related to pre-exposure prophylaxis (or PrEP) for HIV prevention. Despite multiple attempts by HHS to license its patents, Gilead has refused. In the complaint, HHS alleges that Gilead has willfully and deliberatively induced infringement of the HHS patents. The complaint further alleges that, as a result of such infringement, Gilead has profited from research funded by hundreds of millions of taxpayer dollars and reaped billions from PrEP through the sale of Truvada® and Descovy® (Azar 2019).

As a result of the lawsuit, *Gilead Sciences* agreed to work with the Trump Administration on a campaign, entitled 'Ready, Set, Prep' to provide over 200,000 uninsured United States citizens at high risk for an HIV infection PrEP for free (HIV.gov 1), and Gilead will maintain its monopoly over the production of PrEP. The Executive Branch's decision to form a State-sponsored partnership with *Gilead Sciences* for the production and administration of PrEP, to 'End the Epidemic,' represents fundamentally misguided public policy for HIV and AIDS healthcare. A 2019 CDC published report by (Kanay et al.) specifically cites the logical misstep between accessibility of a life saving drug and the uptake of that drug by communities with higher rates of new HIV infection and higher prevalence rates:

> PrEP medication to 200,000 uninsured persons at risk for HIV per year, is expected to help close the health care access gap. However, among MSM who discussed PrEP with their health care provider, the white versus black disparity in PrEP use persisted, even among MSM with health insurance. This finding suggests that black MSM face additional barriers to PrEP use beyond access to health care. Providers might make clinical decisions derived from inaccurate assumptions about racial/ethnic minority patients (Kanay et al. 2019)

Without equal access to health care services and equal quality of health care services, the consideration of the social choice in the determination of a new HIV infection appears more tangential when forming public policy for HIV and AIDS healthcare in NYC. The choice to stress the socio-economic inequalities and challenging conditions of political economy which prevent access to HIV and AIDS healthcare should be recognized as a necessary precondition for public policy for HIV and AIDS healthcare and its implementation.

Conclusion: Policy Improvements to 'End the Epidemic'

In 2009, incumbent Director of the National Institute for Allergy and Infectious Disease (NIAID), Dr. Anthony Fauci, reflected on this history of experimental research for life saving drugs and the role of the gay community in providing every United States (and global) citizen *access* to these drugs:

> Before the development of proven, effective therapy for HIV/AIDS, leaders in the gay and bisexual community influenced me to endorse a policy that gives people with serious illnesses access to experimental treatments, even if the individuals do not qualify for ongoing clinical trials of those treatments. This policy established by the U.S. Food and Drug Administration has become a source of hope for patients with life-threatening conditions (Fauci 2009).[28]

Beyond the public policy initiative of 'gay and bisexual men' in changing the structure of United States federal public health institutions, Fauci noted the 'tens of thousands of gay and bisexual men' who 'participated as volunteers in HIV/AIDS research, including clinical trials of antiretroviral drugs that now form the basis of lifesaving treatment regimens available to millions

[28] In the ongoing COVID-19 pandemic, it may be an important reminder that the ARV (anti-retroviral) biomedical technology and the adaptation to the legal structure to allow for streamlined experimental clinical trials for patients with life-threatening conditions are in large part a product of political movements of the gay and PLWHA community during the ongoing HIV and AIDS epidemic.

of people with HIV infection' (Ibid). Despite the role of gay men, MSM, and PLWHA in influencing public policy for HIV and AIDS healthcare, the 'social pathology' continues to be characterized by socio-economic minorities faced with disparities in access to treatment and outcomes from those treatments.

The lack of significant improvement in the administration of public health resources and inability of public health programs to target risk groups in NYC's ongoing HIV and AIDS epidemic has led to the inadequate implementation of life-saving medicine, with limited achievements in reducing new infections accompanied by unequal health outcomes based on class, race, and sexual choice and their intersections. The NYC DOHMH 'End the Epidemic Program' should thus implement multidimensional, targeted public policies that recognize the relationship between economic inequality and health, improves the marginalized economic condition of PLWHA, and provides the economic resources for adequate HIV treatment to reduce the concentration of new HIV infections amongst socio-economic minorities. Policies, and funding for those policies, should be implemented proportionate to the neighborhoods which exhibit not only high rates of new infection but also those neighborhoods with higher prevalence rates and 'community viral loads.'

The choice of public health policy on behalf of the NYC DOHMH to seek, as Gilead's corporate slogan for PREP claims, 'prevention in a pill,' serves not only to patently enforce the background conditions of accumulation of a monopoly with a history of exploiting public patents and private patients but also detracts from the discussion of meaningful, effective, and most importantly life-saving public health programs in the neighborhoods of NYC. The author urges

the NYC DOHMH to reconsider its view of an epidemic at its 'end' given the gross increase in health disparities during the administration of its 'End the Epidemic' program.

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